

Applicant Remarks

Applicant has amended Claim 1 to introduce as a limitation what was in (now cancelled) Claim 9 and to remove the limitation regarding the type of pre-determined function. For reasons given below, Claim 1 is not anticipated by Ellis. Antecedent basis for the claim amendment is found in the specification on pg. 19, lines 17-23 and pg. 20, line 13.

The other amendments clarify that a "sequencing test" is a step that is applied to the results of the "matching step". Therefore, it is clear that simply storing "signatures" sequentially in a ring buffer is not a "sequencing test."

Regarding Examiner's specific citations to Ellis, the regulations 37 CFR 1.104 state that "On taking up an application for examination ... the examiner shall make a thorough study thereof..." (emphasis added). In this case, the Examiner is mistaken about what Ellis discloses as compared to the claims. A "thorough study" of Ellis reveals that Ellis is all about finding commercials in television signals, not matching audio signals. At Col 44, line 20, Ellis refers to "segments of interest (e.g. commercials.)" Furthermore, at Col. 44, line 33, Ellis reveals that a "segment signature" is "... in the form of combined audio and video frame signatures." Furthermore, Ellis does not continually sample audio programming, but rather is selective out of the section of the video programming that it detects: Ellis states "... the module generates up to four video key signatures and four audio key signatures for a given segment." Col. 44, line 55. Because Ellis' terminology states that a "segment" is a commercial, and Ellis states that the shortest commercial is 10

seconds (see Table II), Ellis is therefore disclosing a system where a few audio samples and a few video data samples are used to identify a 10 second commercial. Ellis' system cannot be used to identify unknown broadcast audio signals of varying signal quality or playback speeds. A "thorough study" of both Ellis and Applicant's claims reveals that the signal processing that the computer system executes in the Applicant's system (and that Applicant claims) is entirely distinct from what Ellis discloses.

Examiner's rejection of Claim 3 actually misstates what is clearly recited in the claim. In Claim 3, the denominator is "the predetermined number of spectral magnitude values." That is, if there are 5 spectral magnitude values in the vector, dividing by 5. Yet what the Examiner cites in Ellis states "dividing by ... the sum of the values in the bands...." Col. 23, line 36. That is an entirely different calculation than what is claimed. In Ellis' case, instead of dividing by 5, one would add up the spectral magnitudes and use that as the denominator.

Examiner's rejection of Claim 4 is equally flawed. Ellis discloses arbitrary constants w_1 to w_4 which are "respective numerical weights assigned to each of the characteristics for determining their relative importance in the determination of the false match rating R ." Col. 27, line 8. These values are fixed numbers. See Table VI and "Finally, in this example, the weights w_1 through w_4 are assigned the values listed in Table VI below." Col. 28, line 14. Ellis does not disclose what is recited in the claim: that the coefficients are the "ordinal index of the spectral magnitude values...." And further, the linear combination the Ellis discloses is not a linear combination of frequency band magnitude

values. Rather, there are four values that Ellis refers to as " the values of the characteristics L, E, T and D..." Col 27, line 11.. L is "the length L of the respective segment" and "E: the entropy of a key signature...", "correlator threshold T" and "the distance D from missing the match." Col 26, lines 43-60. Those are not "frequency band magnitude values." So while Ellis discloses a "linear combination" calculation, Ellis' disclosure does not anticipate the claim limitations recited here.

Examiner's rejection of Claim 9 (now incorporated as a limitation into Claim 1) is also flawed because Examiner states that "the detected signal is a different speed than the stored reference signal is not recited in the instant claim." Examiner is wrong. Claim 1 (which is where this limitation has been placed in the amendment) recites that "... larger than the magnitude of the frequency shift that results from a predetermined maximum tolerated amount of shift in the playback speed of the unknown signal...." Examiner fails to show where in Ellis this is done. And its not disclosed by Ellis for a simple reason: Ellis works with television signals that have a highly regulated frame rate.

Examiner's rejection of Claim 14 is flawed because it cites Ellis' disclosure of a "segment signature ring buffer" as grounds to assert anticipation of a "sequencing test." Yet Examiner fails to explain how storing sequential "segment signatures" recites the "selecting" step as claimed and the "sequencing test" step as claimed. If the "segment signatures" are stored sequentially, Examiner does not explain where the "selecting" occurs that would then result in a subset of those stored signatures being used in a

"sequencing test" step. The storage of incoming "segment signatures" in a ring buffer disclosed by Ellis is not a "sequencing test" step.

In fact, because the buffer disclosed by Ellis is a "ring buffer" it necessarily overwrites older signatures, thus rendering the buffer useless for a "sequencing test" unless the buffer is much larger than the range of time a sequencing test would be applied over. Ellis' disclosure does not address that problem because it does not do a sequencing test. (A "ring buffer" is a set of memory where when the pointer to the current storage location reaches the end is reset to the beginning, hence the notion of a "ring".)

A "thorough study" of Ellis reveals that Examiner's rejection of Claim 21 is flawed. The "correlator" mentioned by Ellis without any further explanation at Col 11, line 30 is stated to receive "segment signatures." As noted above, a "segment signature" is a combination of "up to four video and audio key signatures", that it is "... in the form of combined audio and video frame signatures." Col. 44, line 33. Therefore, the "correlation" recited by Ellis is not for audio signal data alone. Indeed, Ellis does not disclose what the "correlator" does. "Correlate" is a broad term. Given that a genus does not anticipate a species, Ellis' reference to a "correlator" does not anticipate the specific "linear correlation" calculation claimed by Applicant, which is recited to calculate a linear correlation between the known signal time frame indices and those of the unknown signal. Ellis does not disclose this specific correlation calculation.

Examiner also misunderstands Ellis' disclosure at Col 16, Row 14-64. While Ellis discloses some kind of matrix manipulation referred to by Ellis as a "Hotelling " transform, nowhere does Ellis disclose a "sorting... the elements of the column in either ascending or descending order" as recited in Claim 27. Ellis discloses finding a transform matrix "A" so that the video signatures that may occupy too narrow a numeric range (and thereby introduce errors by reducing uniqueness) can be "broken up". See Col 15, line 38-50. This all happens at the "channel boards" that "preprocesses the input video signal to produce video frame signatures which are more uniformly distributed." Col, 15, line 45. This has nothing to do with "searching a data base" as recited in Claim 27.

For the reasons above, Applicant respectfully requests Examiner to withdraw the §102 rejection based on Ellis.